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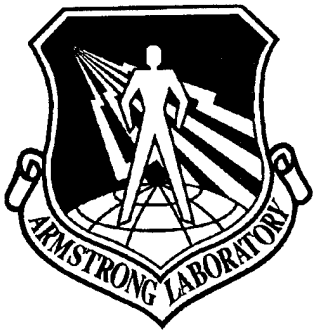

ARMSTRONG LABORATORY

1995 ANNUAL US AIR FORCE TUBERCULOSIS REPORT

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Final Technical Report for 1995

AIR FORCE MATERIEL COMMAND
BROOKS AIR FORCE BASE, TEXAS

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This technical report has been reviewed and is approved for publication.

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13. ABSTRACT *(Maximum 200 words)*

This report evaluates the 1995 US Air Force (USAF) Tuberculosis (TB) Prevention and Control Program. The report analyzes TB mortality, morbidity, and tuberculosis screening data from 88 medical treatment facilities worldwide. The data are compared to US tuberculosis incidence data and to USAF morbidity and screening data for 1992-1994. In 1995, there were no reported deaths attributed to tuberculosis. Among USAF active duty personnel, the tuberculosis incidence rate continued to decline (1995 incidence per 100,000 personnel was 0.49 compared to 1994 incidence of 0.71). Out of the 131,883 TB skin tests (TSTs) administered to active duty personnel, 2,940 were eligible for isoniazid (INH) therapy. Among the nonactive duty population, there were 93,201 TSTs administered. A total of 2,467 nonactive duty persons were positive reactors under 35 years of age or recent converters (71.2% placed on INH).

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Introduction

United States (US) military missions, including humanitarian support and other peace-keeping activities, in areas with endemic tuberculosis (TB) represent a health risk for United States Air Force (USAF) personnel. TB is transmitted as airborne droplets that may stay suspended in the air for long periods. Persons living or working in communities with endemic tuberculosis may become infected even without direct, face-to-face contact with native populations. Protection of USAF personnel and their dependents requires vigilant surveillance using approved methods of administering tuberculin skin tests and prompt, complete treatment of those individuals identified as newly positive or recent converters.

This report presents information on the TB prevention and control program within the USAF. The narrative section of the report describes the 1995 USAF data on tuberculin skin test results, the number of active cases of TB, and the epidemiologic trends. To put the USAF TB experience in perspective, a summary of the international and national TB profile is provided. The second section provides the substantiating data and includes the tables and graphs showing the USAF data compared to US data.

International TB Profile Summary[1]

An estimated 1.7 billion people (one-third of the world population) are currently infected with TB, including nearly half of the world's refugees. Approximately eight million new cases of tuberculosis occur each year. In 1990, 4% of the new cases of TB were attributable to human immunodeficiency virus (HIV) co-infection. By the year 2000, this number is expected to increase to 14%. Worldwide, an estimated 30 million persons are infected with drug-resistant TB. The majority of persons infected with active TB will be young parents and workers, often in their most productive years.

In 1995, nearly 3 million people worldwide died from TB. Tuberculosis now kills more adults than any other infectious disease, including Acquired Immune Deficiency Syndrome (AIDS), malaria, cholera, and other tropical diseases combined. Over 95% of these deaths will be in the developing world where TB accounts for 25% of avoidable adult mortality.

National TB Profile Summary[2,3]

From 1985 through 1992, the number of TB cases reported annually in the US surged 20%, from 22,201 to 26,673. Factors associated with the increase of TB during this time period include the HIV/AIDS epidemic; immigration of persons from countries where TB incidence rates are 10-30

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1 World Health Organization Report on the Tuberculosis Epidemic, 1995 (http://www.who.ch/programmes/gtb/GTB_Homepage.html)

2 CDC. Tuberculosis Morbidity, United States, 1994. MMWR 1995; 44:387-95

3 CDC. Press release. World TB Day News Conference, March 22, 1996

times higher than in the United States; transmission of TB among persons residing in congregate settings such as hospitals, prisons, and homeless shelters; and declines in resources for TB control. In 1992, increased funding for TB programs allowed improved management of TB cases and thus intensified efforts against the disease. In 1993, the Division of TB Elimination (DTBE), Centers for Disease Control and Prevention (CDC), implemented an expanded TB surveillance system to monitor and target groups at risk for TB, assess drug-susceptibility results for initial and final *M. tuberculosis* isolates for each culture-positive TB patient, and evaluate outcome of TB cases.

Recently the CDC reported there was a 6.4% decrease in the number of reported TB cases in the US, from 24,361 new cases reported in 1994 to 22,812 new cases in 1995 (case rates decreased from 9.4 per 100,000 in 1994 to 8.7 per 100,000 in 1995). This represents the third consecutive year that reported cases of TB have declined. Several factors contributed to the decline in reports of new TB cases, including increased program funding and diligent application of directly observed therapy (DOT). Unfortunately, in 1995, 40% of the states reported either no change or an increase in TB cases from the previous year. TB rates increased 28% in Arizona, 11% in Minnesota, 9-10% in Iowa, Louisiana, and Pennsylvania, and 7% in Wisconsin.

Air Force TB Profile Summary

Tuberculosis Mortality in the USAF

Analysis of the Retrospective Case Mix Analysis Systems (RCMAS) data base showed no deaths associated with tuberculosis either among USAF active duty or dependent/retired personnel who were admitted to Department of Defense hospitals. The data base records disposition of USAF personnel, their dependents, and retirees who were hospitalized. The search included primary diagnosis of tuberculosis (ICD code 010-018.9) as cause of death.

Tuberculosis Morbidity in the USAF

Table 1, *USAF TB Detection and Control Program by MAJCOM, 1994*, summarizes the reports from each of the medical treatment facilities (MTF) within the major commands (MAJCOM). Divided into two sections, Table 1 contains data on tuberculin skin test results and number of active cases of TB identified among active duty personnel (AD) and among dependents and retirees (nonactive duty [NAD]).

Two cases of tuberculosis were reported among the AD population and 30 cases among NAD duty personnel. In 1995, the incidence rate of TB among AD personnel was 0.49 per 100,000. **Figure 1** shows the trend of TB incidence rate since 1982 and compares the USAF experience with that of the US. Historically, the AD USAF TB incidence rate has been considerably lower than the US rate. The trend for the AD USAF population shows a decline of tuberculosis overall, with two peaks occurring in 1983 and 1987. The rate has declined since 1987.

USAF Tuberculosis Screening and Chemoprophylaxis Program

In 1995, a total of 225,084 tuberculin skin tests (TST) were administered. This represents an increase for AD of 13.6% and a decrease of 2.6% for NAD from the number of tests administered

in 1994. The increase in TST administered to AD personnel may reflect added screening due to deployments and peace-keeping missions in endemic areas.

In 1995, there were 5,407 persons (2,940 AD and 2,467 NAD) testing positive on the tuberculin skin test. A total of 4,451 people were placed on isoniazid (INH) as a result of the screening program **(Table 1)**. The percentage of TST positive AD personnel placed on INH has risen from a low of 71% in 1991 to 91.7% in 1995 **(Figure 2)**. Among NAD, the percentage has remained relatively constant (71.2% for 1995), probably reflecting the fact that this population is not mandated to report for follow-up therapy.

MTFs reported a total of 1,123 people were either not placed on, or were removed from, INH therapy **(Table 2)**. Of this group, those removed due to pregnancy or permanent change of station (PCS) typically receive follow-up after delivery or upon arrival at their next duty station. **Table 1** shows the number of persons diagnosed at a previous duty station who are receiving INH therapy at the current duty station.

Limitations of the Data

The terms "active duty" and "nonactive duty" have not been defined in AFI 48-115, *TB Detection and Control Program*. The active duty group may encompass active duty USAF, Air National Guard, and Reserves and active duty members of other services who obtain care in USAF MTFs. The nonactive duty population comprises those other than active duty (retirees, dependents, or other beneficiaries) who utilize the MTF. MTFs reporting by major command are listed in **Appendix 1**.

The incidence rate of TB among AD personnel was determined by using the mid-year population data obtained from the *1995 Annual US USAF Sexually Transmitted Disease Report.* Incidence rates of newly diagnosed AD positive reactors < 35 years of age and those of AD recent converters could not be determined because the denominator data were not stratified by age or TST result category. Incidence rates for the NAD duty population cannot be determined since mid-year population data are not available for this group.

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TABLE 1. USAF TB DETECTION AND CONTROL PROGRAM BY MAJCOM, 1995

	MAJCOM										
ACTIVE DUTY	ACC	AFSPC	USAFE	AFMC	USAFA	ADW	AMC	AETC	PACAF	AFSOC	TOTAL
Newly Diagnosed Positive Under Age 35	132	37	59	70	4	2	253	686	158	5	1,406
Placed on INH	105	28	30	56	3	2	224	613	137	5	1,203
Percentage on INH	80%	76%	51%	80%	75%	100%	89%	89%	87%	100%	86%
New Positive - Previous Base	21	11	4	12	0	2	19	20	27	4	120
Placed on INH	21	10	4	9	0	2	15	17	24	3	105
Percentage Placed on INH	100%	91%	100%	75%	N/A	100%	79%	85%	89%	75%	88%
Recent Converters Any Age	227	72	145	151	8	10	378	348	189	6	1,534
Placed on INH	191	63	91	122	8	10	348	295	120	5	1,253
Percentage on INH	84%	88%	63%	81%	100%	100%	92%	85%	63%	83%	82%
Recent Converters - Previous Base	43	14	9	9	2	6	21	17	25	2	148
Placed on INH	41	12	9	9	2	5	17	15	22	2	134
Percentage Placed on INH	95%	86%	100%	100%	100%	83%	81%	88%	88%	100%	91%
Total Newly Diagnosed Positive or Converter	359	109	204	221	12	12	631	1034	347	11	2940
Total on INH	358	113	134	196	13	19	604	940	303	15	2695
Percent on INH	99.7%	103.7%	65.7%	88.7%	108.3%	158.3%	95.7%	90.9%	87.3%	136.4%	91.7%
Total TB Skin Tests Given and Read	14,872	2,944	11,929	8,955	672	1,509	24,636	49,290	16,665	411	131,883
Number of active TB Cases	0	0	0	0	0	0	2	0	0	0	2
MIDYEAR POPULATION	105,800	23,499	36,866	57,373	6,774	2,744	54,429	71,076	41,528	7,000	407,089
RATE OF ACTIVE TB PER 100,000											0.49
NONACTIVE DUTY											
Newly Diagnosed Positive Under Age 35	230	52	153	124	8	4	175	77	487	11	1,321
Placed on INH	151	39	68	80	3	4	131	49	310	7	842
Percentage Placed on INH	66%	75%	44%	65%	38%	100%	75%	64%	64%	64%	64%
New Positive - Previous Base	21	1	6	11	0	1	11	8	17	0	76
Placed on INH	19	0	5	8	0	1	9	7	13	0	62
Percentage Placed on INH	90%	0%	83%	73%	N/A	100%	82%	88%	76%	N/A	82%
Recent Converters Any Age	200	56	165	110	2	6	125	210	265	7	1,146
Placed on INH	147	50	80	62	2	6	95	161	188	6	797
Percentage Placed on INH	74%	89%	48%	56%	100%	100%	76%	77%	71%	86%	70%
Recent Converters - Previous Base	20	4	5	4	0	1	4	16	5	2	61
Placed on INH	17	3	5	2	0	1	4	16	5	2	55
Percentage Placed on INH	85%	75%	100%	50%	N/A	100%	100%	100%	100%	100%	90%
Total Newly Diagnosed Positive or Converter	430	108	318	234	10	10	300	287	752	18	2467
Total on INH	334	92	158	152	5	12	239	233	516	15	1756
Percent on INH	77.7%	85.2%	49.7%	65.0%	50.0%	120.0%	79.7%	81.2%	68.6%	83.3%	71.2%
Total TB Skin Tests	17,508	5,272	14,339	12,049	481	1,042	11,710	11,628	18,287	885	93,201
Number of active TB Cases	6	2	0	0	0	0	10	6	6	0	30

Table 2. SUMMARY OF REASONS WHY PATIENTS WERE NOT PLACED ON INH PROPHYLATIC THERAPY

	ACC	AFSPC	USAFE	AFMC	USAFA	ADW	AMC	AETC	PACAF	AFSOC	TOTAL
Pregnancy	82	16	54	32	3	1	25	33	64	5	315
Liver Disease	4	1	1	0	0	0	0	2	1	0	9
Patient Refusal	5	5	16	19	1	0	16	4	41	0	107
PCS	37	4	150	22	1	0	11	52	142	0	419
Other Medical	74	14	27	79	1	0	72	103	105	0	475
TOTAL NOT PLACED INH	202	40	248	152	6	1	124	194	353	5	1123

Figure 1

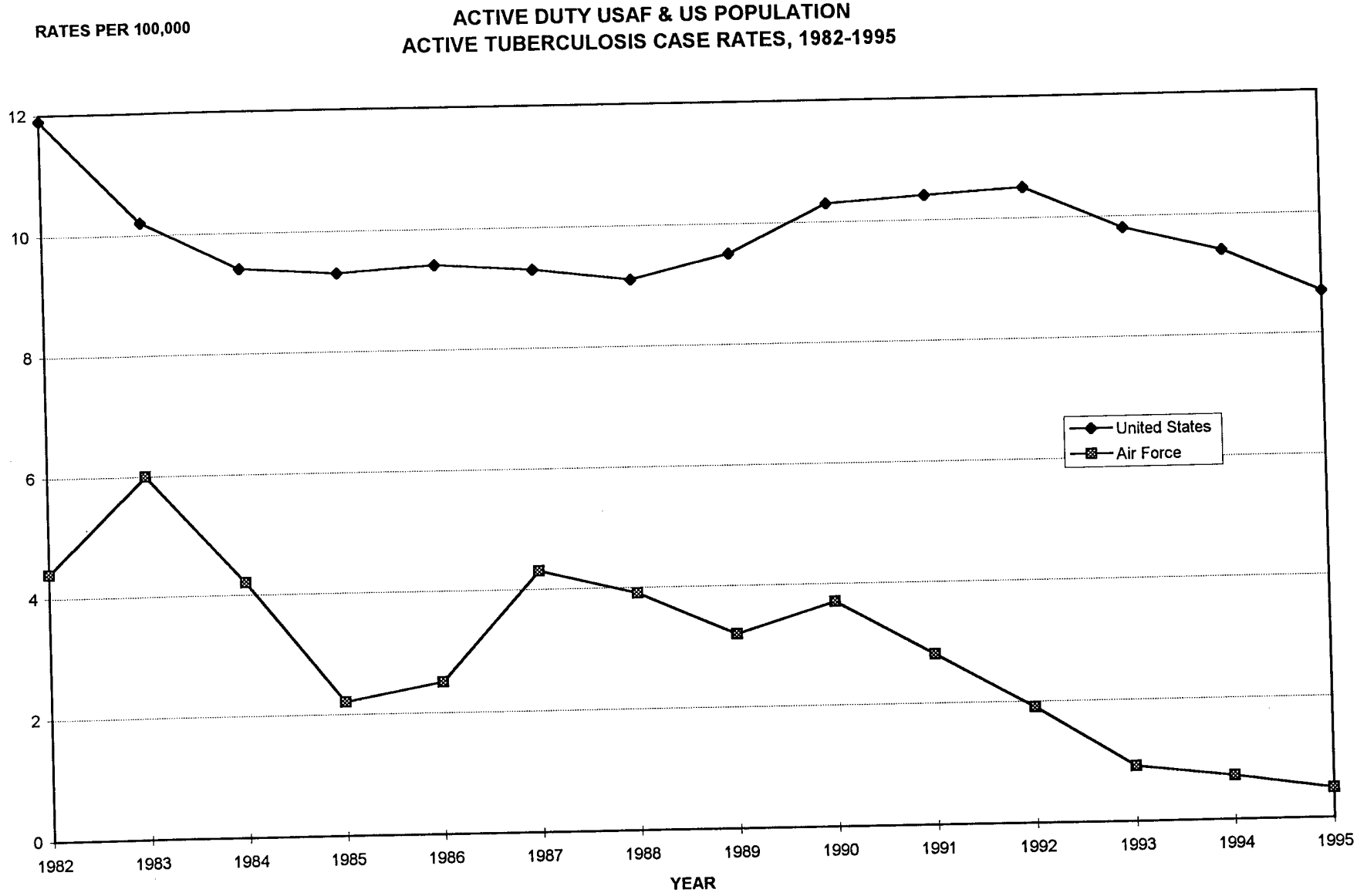
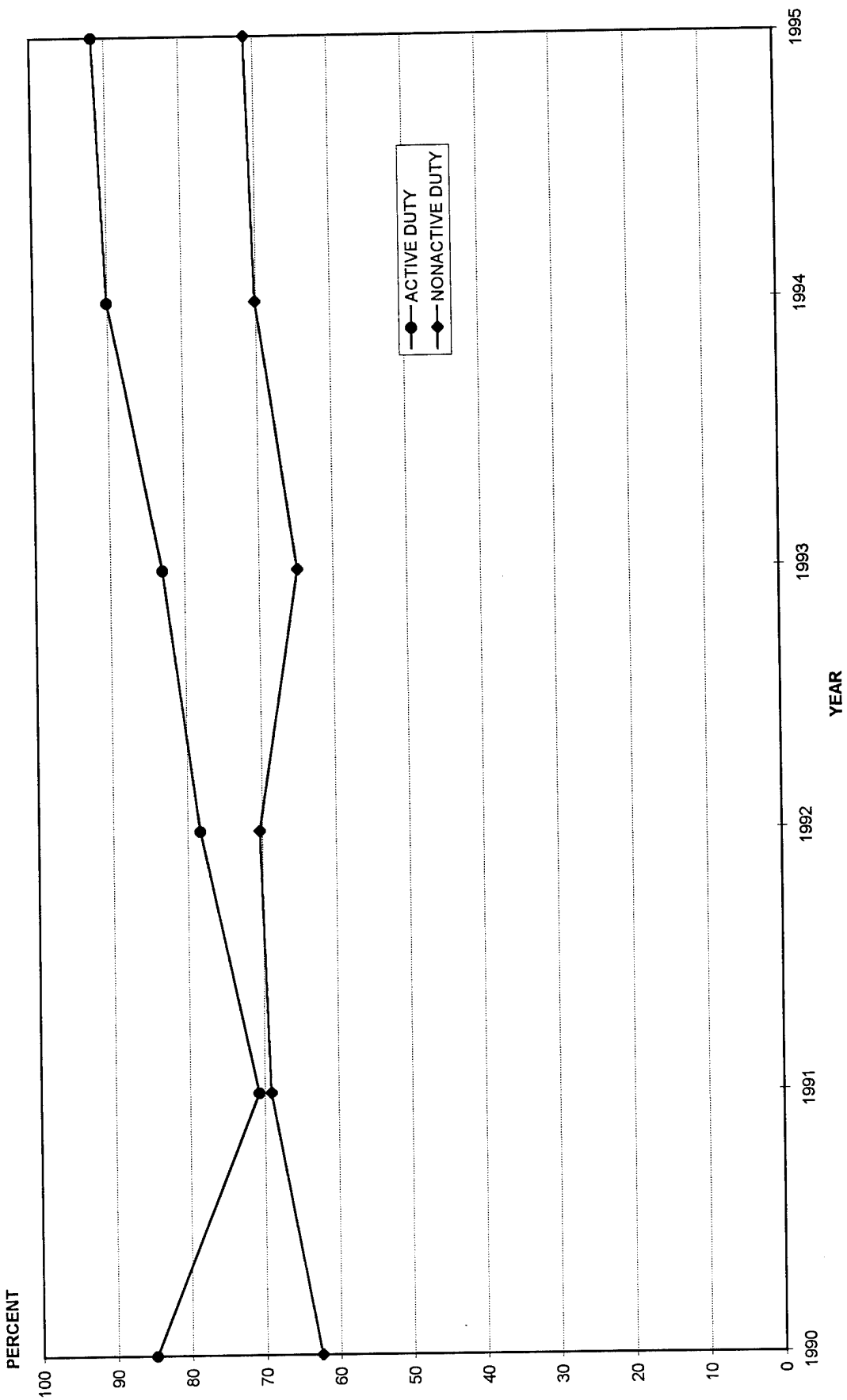

RATES PER 100,000
ACTIVE DUTY USAF & US POPULATION
ACTIVE TUBERCULOSIS CASE RATES, 1982-1995
12
10
8
6
4
2
0
United States
Air Force
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
YEAR

Figure 2

AIR FORCE PERSONNEL
PERCENT TST POSITIVE PLACED ON INH PREVENTIVE THERAPY, 1990-1995



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Appendix 1

Reporting Installation Medical Treatment Facilities by MAJCOM

ACC - Barksdale, Beale, Cannon, Castle, Davis-Monthan, Dyess, Ellsworth, Griffiss, Holloman, Howard, K.I. Sawyer, Lajes, Langley, Little Rock, MacDill, Minot, Moody, Mt. Home, Nellis, Offutt, Pope, Seymour Johnson, Shaw, Whiteman

AETC - Altus, Columbus, Goodfellow, Keesler, Lackland, Laughlin, Luke, Maxwell, Randolph, Reese, Sheppard, Tyndall, Vance

AFMC - Brooks, Edwards, Eglin, Hanscom, Hill, Kelly, Kirtland, Los Angeles, McClellan, Robins, Tinker, Wright-Patterson

AFSPC - Peterson, Vandenberg, Malmstrom, Patrick, Onizuka, FE Warren

AMC - Andrews, Charleston, Dover, Fairchild, Grand Forks, March, McChord, McConnell, McGuire, Plattsburgh, Scott, Travis

PACAF - Andersen, Elmendorf, Eielson, Hickam, Kadena, Kunsan, Misawa, Osan, Yokota

ADW - Bolling

USAFE - RAF Alconbury, Aviano, RAF Chicksands, Incirlik, Izmir, Lakenheath, Ramstein, Spangdahlem/Bitburg, Sembach, Rhein-Main

USAF Academy